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The Baltic cod – An unexpected journey

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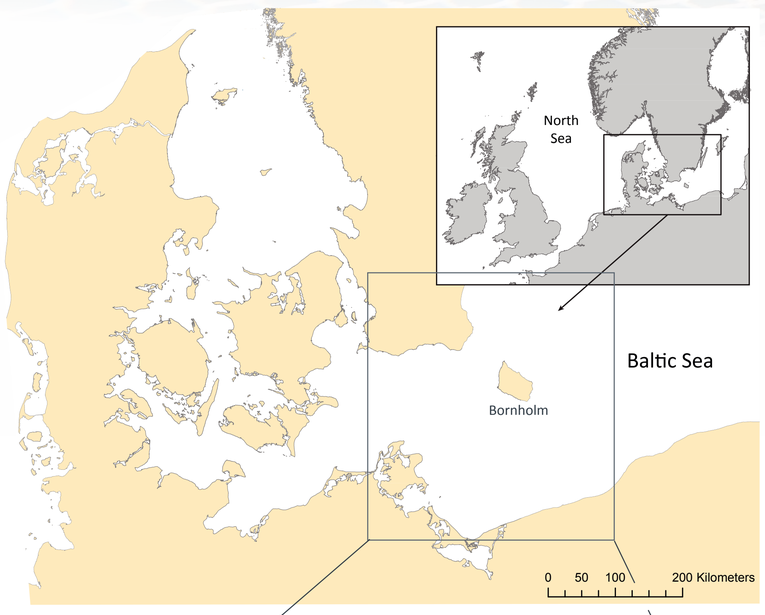

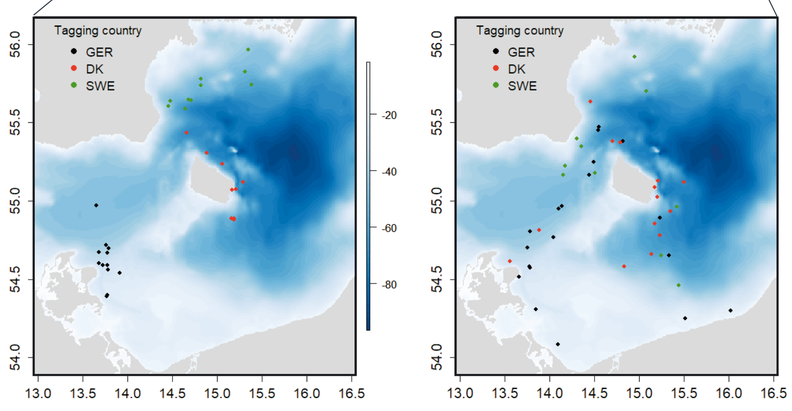

Figure A: Release (left) & recapture (right) positions of the 43 recaptured DSTs-tagged cod.

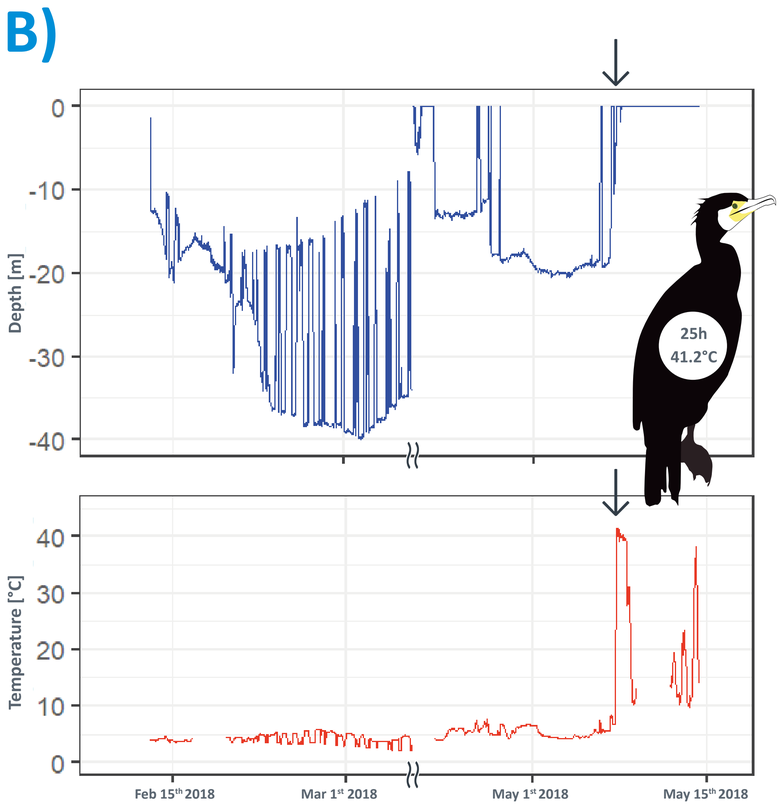

Figure B: Temperature and depth profile of DST-tagged cod which was eaten by a cormorant. Arrows indicate predation event.

Worrying trends such as decreases in stock size and individual growth rates, and diminished distribution range, have been observed in the eastern Baltic cod stock in recent years. However, the mechanisms underlying these stock developments are still poorly understood.

In an effort to better understand the observed changes in this stock, 1260 cod in the eastern Baltic Sea were tagged with data storage tags (DSTs) which record high-resolution measurements of temperature and pressure. Each of the 43 recaptured tags provides a wealth of valuable new data, revealing insights into Baltic cod ecology and their individual journeys through the Baltic Sea.

A) Overview of recaptures

- Days at liberty between 4-375 days
- Movement of the cod influenced by season and release position (Fig. A)
- Geolocation needed to reconstruct path between release & recapture positions

B) Cormorant predation

- Found by ornithologist on a cormorant colony half a year after death
- Captured in shallow, coastal water (3m depth, Fig. B)
- Influence on DST performance?

C) Shallow movements

- Scientific survey could miss cod making use of shallow water habitats in quarter 1 & 4 (Fig.C)
- Upslope or pelagic movements?
- Potential survey bias if interannual variability

D) Moon phase

- Extent of vertical migration varies with moon phase (Fig. D)
- Follow prey organisms in shallow water at night
- Behaviour only observed with cod released off the Swedish coast

Conclusion

The DSTs from recaptured cod have already revealed a surprising diversity in movement and behaviour patterns of eastern Baltic cod, both within and between individuals.

Use of shallow water habitats appears to be more important than previously assumed. This diversity should be considered when attempting to understand changes in status of the stock.

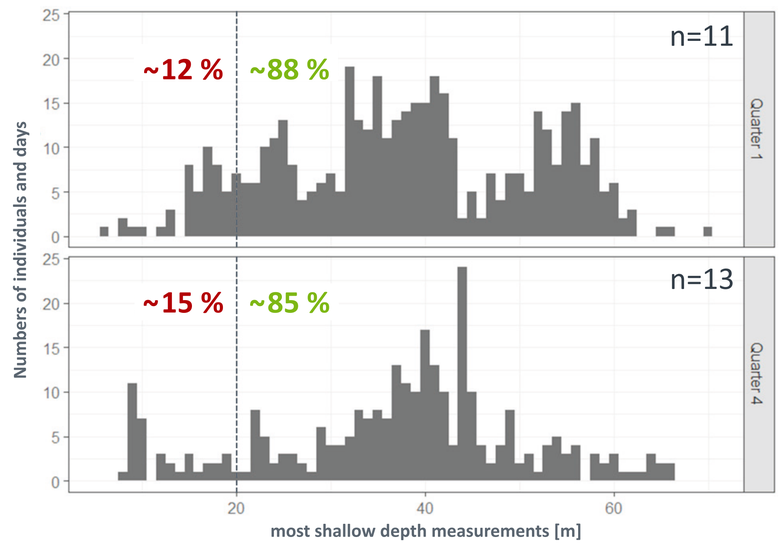

Figure C: Shallowest depth per individual and day between 8 am – 6 pm (survey operational time) The vertical line shows the minimum operational depth of the scientific survey.

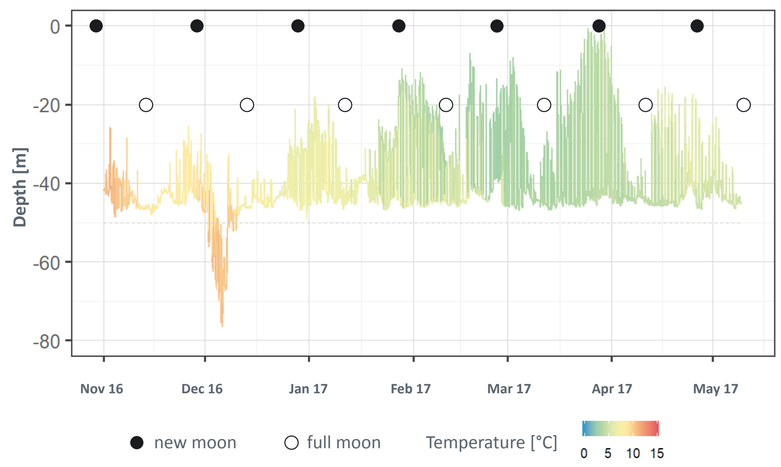

Figure D: Temperature and depth profile of a DST-tagged cod released by Sweden.

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Tagging Baltic Cod